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INTRODUCTION.

This REVIEW treats generally the meteorological conditions of the United States and Canada for November, 1887, and is based upon the reports of regular and voluntary observers of both countries. Descriptions of the storms that occurred over the north Atlantic Ocean are also given, and their paths shown on chart i, on which also appear the limits of fog-belts west of the fortieth meridian. No ocean ice has been reported.

East of the Mississippi River and on the north Pacific coast the temperature was about normal, but in all districts west of the ninety-fifth meridian, except the north Pacific coast, the month was decidedly warmer than the average, the departures from the normal temperatures amounting to from 4° to 6° in the central and southern Rocky Mountain districts.

The rainfall in general was below the average in all parts of the country, the deficiency being greatest in the east Gulf states, where the rainfall was only about 15 per cent. of the normal.

Some special data in connection with the deficiency of rainfall during the period from March to November, 1887, is given under the heading "Drought," from which it is shown that over an extensive area the rainfall of the period mentioned is less than 60 per cent. of the normal.

Chart iii formerly issued with the REVIEW has been discontinued, and will not therefore appear in future REVIEWS.

A new chart (similar to number v of the REVIEW for July, 1887), numbered iii, accompanies this issue.

In the preparation of this REVIEW the following data, received up to December 20, 1887, have been used, viz., the regular tri-daily weather-charts, containing data of simultaneous observations taken at 133 Signal Service stations and 23 Canadian stations, as telegraphed to this office; 170 monthly journals and 168 monthly means from the former and 23 monthly means from the latter; 268 monthly registers from voluntary observers; 60 monthly registers from United States Army post surgeons; marine records; international simultaneous observations; marine reports through the co-operation of the "New York Herald Weather Service;" monthly weather reports from the local weather services of Alabama, Illinois, Indiana, Kansas, Louisiana, Michigan, Missouri, Nebraska, New England, New Jersey, North Carolina, Ohio, Oregon, Pennsylvania, and Tennessee, and the Central Pacific Railway Company; trustworthy newspaper extracts, and special reports.

ATMOSPHERIC PRESSURE (expressed in inches and hundredths).

The distribution of mean pressure for November, 1887, determined from the tri-daily telegraphic observations of the Signal Service, is shown by isobarometric lines on chart ii.

As to the region covered by the area of greatest mean pressure, the November chart is similar to that for the preceding month, and it may be said that the general distribution of pressure for November does not materially differ from that for October, the range (.27) in the monthly means being considerably less than during the two preceding months. From the area of barometric maxima, which covers portions of the middle and southern plateau regions, the gradient is steepest to the northward and northwestward, the mean pressure at Olympia, Wash., being 30.01, and at Calgarry, British Northwest Territory, 29.98; the decline of pressure is least to the southeastward, the barometric means falling to slightly below 30.1 over the eastern Rocky Mountain slope, and thence increasing to 30.16 at Knoxville, Tenn. While the region of least mean pressure for October was a part of the southern plateau, that for the current month is the Gulf of Saint Lawrence and the Canadian provinces to the westward. The barometric means of November, compared with those of the preceding month, show an increase over nearly the whole country, the exception being the region extending from Dakota westward to the Pacific coast (where deficiencies occur) and the central Mississippi and lower Ohio valleys (where no change is shown). The deficiency is greatest on the north Pacific coast, and the greatest excesses are in the southern plateau and portions of the south Atlantic and east Gulf states, the extreme departures being: Olympia, Wash., .17 deficiency; and Cedar Keys, Fla., and Yuma, Ariz., excess .11 and .12, respectively.

The departures from the normal pressure for the various stations are given in the table of miscellaneous meteorological data. The mean pressure of the current month so nearly corresponds with the normal that there is but one comparatively small area, embracing portions of the lower lake region, New England, and the middle Atlantic states, over which the departures (deficiencies) amount to or exceed .05. The extreme departures are: deficiency, New London, Conn., .08; excess, La Crosse, Wis., .04.

BAROMETRIC RANGES.

The monthly barometric ranges at the various Signal Service stations are also given in the table of miscellaneous meteorological data. The ranges, as usual, conform to the general rule, that is, they increase with the latitude and decrease slightly, though somewhat irregularly, with increasing longitude. A comparison of the barometric ranges of the current month with the November normal ranges shows no marked contrast, except over the region extending from Minnesota eastward to the New England coast where they are much greater than usual, the departure in the upper lake region amounting to about .50. In the states bordering on the Atlantic the extreme ranges are, .32 at Key West, Fla., and 1.76 at Portland, Me.; over the interior of the country, .48 at Galveston, Tex., and 1.77 at Escanaba, Mich.; on the Pacific coast, .45 at San Diego, Cal., and 1.09 at Port Angeles and Tatoosh Island, Wash.

AREAS OF HIGH PRESSURE.

Six areas of high pressure were observed within the limits of territory covered by the daily weather charts during the month of November. Two of these areas apparently ap-